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IS 4375 (1975): Cotton Knitted Sports Shirts [TXD 10: Hosiery]



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“Knowledge is such a treasure which cannot be stolen”



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IS : 4375 - 1976

*Indian Standard*  
SPECIFICATION FOR  
COTTON KNITTED SPORTS SHIRTS  
( *First Revision* )

First Reprint MAY 1981

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**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

**AMENDMENT NO. 1    MARCH 1978**  
**TO**  
**IS : 4375-1975 SPECIFICATION FOR COTTON**  
**KNITTED SPORTS SHIRTS**  
**( First Revision )**

**Alteration**

( Page 9, informal table under clause 8.3 ) – Substitute the following for the existing matter:

<i>Characteristic</i>	<i>Number of Shirts to be Tested</i>	<i>Criterion for Conformity</i>
Visual inspection and dimensions	See col 2 of Table 4	Non-conforming shirts not to exceed the corresponding number given in col 3 of Table 4
Dimensional change and pH value	See col 4 of Table 4	All the shirts to satisfy the relevant requirements
Colour fastness	1 for lot size of 500 and 2 above that	All the test specimens satisfy the relevant requirements

( TDC 15 )

*Indian Standard*

SPECIFICATION FOR  
COTTON KNITTED SPORTS SHIRTS  
( *First Revision* )

Hosiery Sectional Committee, TDC 15

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**IS : 4375 - 1975**

( Continued from page 1 )

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## AMENDMENT NO. 2 JUNE 1991

### TO

## IS 4375 : 1975 SPECIFICATION FOR COTTON KNITTED SPORTS SHIRTS

( *First Revision* )

( This amendment is being issued to facilitate manufacture of different varieties of sports shirts by giving only the general guidelines and specifying the performance requirements based on the present manufacturing practices. )

( *Page 4, clause 3.1, line 1* ) — Substitute the following for the existing matter:

'The sports shirts may be any one of the following three styles:'

( *Page 4, clause 3.1, Type 3* ) — Insert '/V-neck' after the word 'bow-neck'.

( *Page 5, F g. 3, caption* ) — Insert 'V-Neck' after the word 'Bow-Neck'.

( *Page 5, clause 4.1.1, line 3* ) — Substitute 'IS 1720 : 1978\*' for 'IS : 1720-1969\*' and insert '/printed' after the word 'dyed'.

( *Page 5, clause 4.1.2* ) — Substitute '4' for '5'.

( *Page 5, clause 4.3* ) — Insert the following new clause and renumber the subsequent clause:

**4.3 Sports Shirts** — If desired by the buyer, the sports shirts classified in 3.1 may be manufactured with half sleeves or full sleeves. The shirts may be with or without pockets.

**4.3.1** The collar, welts at elbow ends of the sleeves or cuffs and at the bottom may be made out of rib knitted fabrics, as desired by the buyer.

**4.3.2** The dimensions of pocket ( s ), collar and number of buttons to be provided ( for Type 1 and Type 2 ) and the length and width of placket shall be as agreed to between the buyer and the seller. If desired by the buyer, slide fasteners or press buttons of good quality may be provided in place of buttons.

**4.3.3** The hem or folding at bottom, at sleeves or at neck shall be evenly and securely stitched and the minimum dimensions shall be as agreed to between the buyer and the seller.

**4.3.4** The shirts may also be screen or transfer printed with motifs or design as desired by the buyer.'

( *Page 5, foot-note* ) — Substitute '( *second revision* )' for '( *first revision* )'.

( *Page 6, clause 5.1* ) — Substitute the following for the existing clause:

**5.1 Fabric** — The shirts have been tailored from evenly and well knitted fabric conforming to either IS 9469 : 1991\* or IS 13003 : 1991†, as agreed to between the buyer and the seller. The fabric may be bleached, dyed





or printed to the required shade.'

( Page 6, Table 2, col 2 ) — Under heading delete 'Min' and against tolerance insert ' $\pm 1.5$ '.

( Page 6, Table 2, col 3 ) — Against tolerance substitute 'Min' for ' $\pm 2.0$ '.

( Page 6, foot-notes ) — Substitute the following for the existing foot-notes:

\*Textiles — Fabric, cotton, plain knitted — Specification ( *first revision* ).

†Textiles — Fabric, cotton, interlock knitted — Specification.'

( Page 7, clause 5.3.1 ) — Substitute the following for the existing clause:

**5.3.1** The shirts shall satisfy the performance ( physical and chemical ) requirements specified in IS 9469 : 1991\* or IS 13003 : 1991†, as the case may be.'

( Page 7, Table 3 and clause 5.3.2 ) — Delete.

( Page 7, clause 6.1 ) — Substitute the following for the existing clause:

**6.1** A suitable cloth label shall be securely attached to each shirt at the inside of the neck portion on which shall be indicated the following:

- a) Size and style of sports shirt;
- b) Type of fabric, in case of interlock shirt;
- c) Designation of fabric ( see IS 9469 : 1991\* or IS 13003 : 1991†, as the case may be ); and
- d) Indication of the source of manufacture.'

( Page 7, foot-notes ) — Substitute the following for the existing foot-notes:

\*Textiles — Fabric, cotton, plain knitted — Specification ( *first revision* )

†Textiles — Fabric, cotton, interlock knitted — Specification.'

( Page 8, clause 6.1.1 ) — Substitute the following for the existing clause :

**6.1.1** The shirts may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.'

( Page 9, Table 4 and clause 8.3 ) — Substitute 'Table 3' for 'Table 4' wherever appearing.

( Page 9, Appendix A ) — Substitute the following for the existing appendix:

## **‘A P P E N D I X A**

( Clause 5.2 )

### **METHOD OF TEST**

#### **A-1 CONDITIONING OF TEST SPECIMENS AND ATMOSPHERIC CONDITIONS FOR TESTING**

**A-1.1** The test specimen shall be tested in prevailing atmospheric conditions. In case of dispute, the sample shall be conditioned and tested in the standard atmosphere as given in IS 6359 : 1971\*.

#### **A-2 DIMENSIONS**

**A-2.1** Take each shirt constituting the test specimens. Lay it flat on a table. Remove all creases and wrinkles without distorting the specimen. Measure correct to the nearest to 0.5 cm, the dimensions given in Table 2 when read with Fig. 1.

---

\*Method for conditioning of textiles.

*Indian Standard*

SPECIFICATION FOR  
COTTON KNITTED SPORTS SHIRTS  
*( First Revision )*

**0. FOREWORD**

**0.1** This Indian Standard ( First Revision ) was adopted by the Indian Standards Institution on 31 December 1975, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

**0.2** This standard which was first published in 1967 prescribed only one type of sports shirts having collar and placket in front for neck opening. Sports shirts with T-neck and round-neck ( or bow-neck ) have become quite popular now-a-days. This standard has been taken up for revision in order to provide for these types of shirts. The quality characteristics of the knitted fabrics from which the shirts are to be fabricated have also been incorporated in this revision.

**0.3** This standard contains clauses **5.1, 5.4.1, 8.2** and some dimensions in Table 2 which call for agreement between the buyer and the seller.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

**1. SCOPE**

**1.1** This standard prescribes the requirements of three types of cotton knitted sports shirts.

**1.2** This standard does not specify the general appearance, lustre, feel and shade of the shirts ( see also 5.4 ).

**2. TERMINOLOGY**

**2.1** For the purpose of this standard, the definitions given in IS : 3596-1967† shall apply.

\*Rules for rounding off numerical values ( revised ).

†Glossary of terms relating to hosiery.

3. TYPES

3.1 The sports shirts shall be of any one of the following three types:

Type 1 — Shirt with collar and placket ( see Fig. 1 ),

Type 2 — Shirt with T-neck ( see Fig. 2 ), and

Type 3 — Shirt with round-neck ( or bow-neck ) ( see Fig. 3 ).

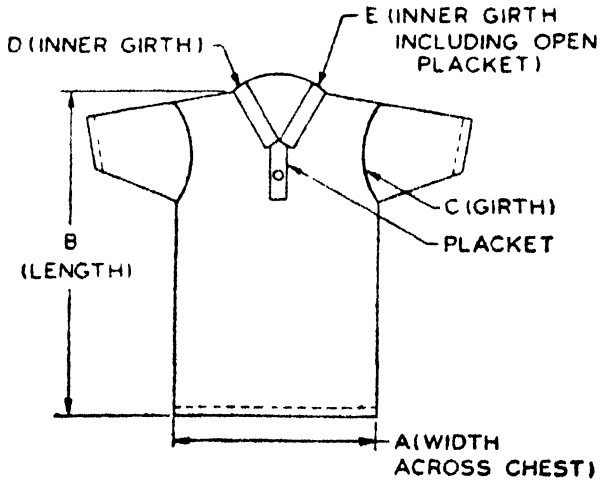


FIG. 1 SHIRT WITH COLLAR AND PLACKET (TYPE 1)

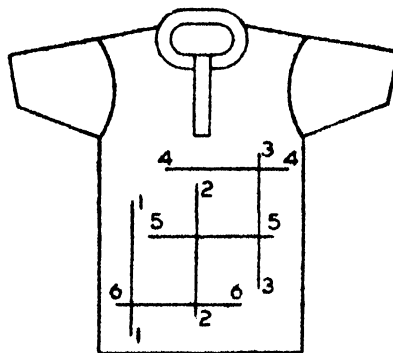


FIG. 2 SHIRT WITH T-NECK (TYPE 2)

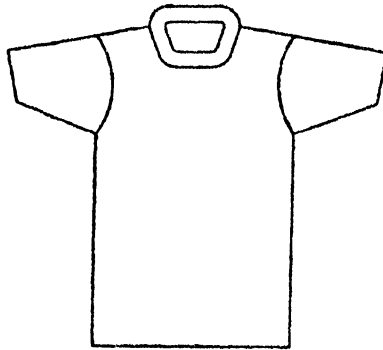


FIG. 3 SHIRT WITH ROUND-NECK OR BOW-NECK (TYPE 3)

## 4. MANUFACTURE

### 4.1 Seams and Stitches

**4.1.1** For stitching various portions of shirts, the type of stitches and count of sewing thread used shall be as given in Table 1. The sewing thread shall preferably conform to IS : 1720-1969\*. In case of dyed shirts the sewing thread should be of matching shade.

---

**TABLE 1 SEAMS AND STITCHES**

PORTION TO BE STICHHED (1)	TYPE OF STITCH (2)	THREAD IN NEEDLE(S) (3)	THREAD IN LOOPER(S) (4)
All the joinings to assemble different portions of shirts	3-thread overlock	One strand of 9·8 tex × 3 (cotton count 60s/3)	Two strands of 15 tex × 2 (cotton count 40s/2)
Hemming at the bottom and sleeve ends	2-thread overlock	One strand of 9·8 tex × 3 (cotton count 60s/3)	One strand of 15 tex × 2 (cotton count 40s/2)

---

**4.1.2** The number of stitches shall not be less than 5 per cm.

**4.2 Reinforcement** — The seams at the shoulders of sports shirts shall be suitably reinforced.

**4.3 Freedom from Defects** — The shirts should be free from manufacturing defects such as mends, ladders, dropped stitches, improper reinforcement, missed stitches at the stitched parts, badly sewn and mispositioned

\*Specification for cotton sewing threads (first revision).

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buttons, malformed button holes, chemical damages and dyeing defects, such as streakiness and uneven dyeing.

### 5. REQUIREMENTS

**5.1 Fabric** — The shirts shall be tailored from well and evenly knitted fabric conforming to IS : 4964 ( Part I )-1975\* or IS : 4965 ( Part I )-1975† as agreed to between the buyer and the seller. The fabric may be bleached or dyed to the required shade.

**5.2 Dimensions** — The dimensions of shirts when measured by the method prescribed in **A-2** shall conform to the requirements of Table 2.

NOTE — Size of the shirt is denoted by a number which has numerical value of chest girth in centimetres.

*Example:*

An 80 size shirt represents a shirt with chest girth of 80 cm.

**TABLE 2 DIMENSIONS OF SPORTS SHIRTS**

All dimensions in centimetres.

SIZE	WIDTH ACROSS CHEST	LENGTH OF SHIRT	GIRTH OF ARMHOLE	INNER GIRTH OF NECK OPENING*	INNER GIRTH OF TOTAL NECK OPENING INCLUD- ING PLACKET*
	<i>Min</i> <i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>Min</i> <i>E</i>
(1)	(2)	(3)	(4)	(5)	(6)
45	22.5	36	22	24.0	38.0
50	25.0	40	26	26.0	41.0
55	27.5	44	28	26.0	41.0
60	30.0	48	30	28.0	44.0
65	32.5	51	32	28.0	44.0
70	35.0	55	36	32.0	48.5
75	37.5	59	38	33.0	50.0
80	40.0	63	40	34.5	51.5
85	42.5	66	42	35.5	54.0
90	45.0	70	46	36.5	54.0
95	47.5	74	48	37.0	56.5
100	50.0	78	50	37.0	56.5
105	52.5	81	52	38.0	58.5
110	55.0	85	54	38.0	58.5
TOLER- ANCE	—	±2.0	±1.0	±0.5	—

\*These dimensions may be varied, if desired by the buyer; however, these shall be subject to the tolerances specified.

\*Specification for plain knitted cotton vests: Part I Fabric (first revision).

†Specification for interlock knitted cotton vests: Part I Fabric (first revision).

### 5.3 Other Requirements

**5.3.1** The dimensional change (due to relaxation) and pH value of the aqueous extract shall be as given in Table 3.

**TABLE 3 OTHER REQUIREMENTS OF SHIRTS**

Sl. No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST
(1)	(2)	(3)	(4)
i)	Dimensional change (due to relaxation)	5.0 percent, <i>Max</i>	A-3
ii)	pH value of aqueous extract	6.0 to 10.0	IS : 1390-1961*

\*Methods for determination of pH value of aqueous extracts of textile materials.

**5.3.2** The dyed shirts shall be of fast colour. The manufacturers shall ensure this by using the dyes of the recommended classes and adopting the dyeing procedure as recommended by the dye manufacturers. However, in case of disputes, the shirts when tested for colour fastness to light, washing and perspiration shall have minimum ratings of 5, 4 and 3 when tested according to IS : 2454-1967\* or IS : 686-1971†, IS : 687-1966‡ and IS : 971-1956§.

**5.4 Sealed Sample** — If in order to illustrate or specify the indeterminable characteristics such as general appearance, lustre, feel and colour of shirts, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respects.

**5.4.1** The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

## 6. MARKING

**6.1** A suitable cloth label shall be securely attached to each shirt at the inside of the neck portion on which shall be indicated the following:

- a) Type and size of shirt;
- b) Type of fabric namely, plain or interlock; and
- c) Manufacturer's name, initials or trade-mark.

\*Method for determination of colour fastness of textile materials to artificial light (xenon lamp).

†Method for determination of colour fastness of textile materials to daylight.

‡Method for determination of colour fastness of textile materials to washing: Test 1 (first revision).

§Method for determination of colour fastness of textile materials to perspiration.



## **IS : 4375 - 1975**

### **6.1.1** The shirts may also be marked with the ISI Certification Mark.

**NOTE** — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

## **7. PACKING**

**7.1** The shirts shall be packed in bales or cases in accordance with IS : 3325-1965\* or IS : 3086-1965† as the case may be.

## **8. SAMPLING AND CRITERIA FOR CONFORMITY**

**8.0** The sampling procedure detailed in **8.1** to **8.3** shall give desired protection to the buyer and the seller provided the lot submitted for inspection is homogeneous. To achieve this, the manufacturers shall maintain system of process control at all stages of manufacture ensuring that shirts tendered by him for inspection comply with the requirements of this standard in all respects.

**NOTE** — For effective process control, the use of statistical quality control technique is recommended and helpful guidance may be obtained in this respect from IS : 397 ( Part I )-1972‡.

**8.1** In any consignment all the shirts of the same size and manufactured from the same count and quality of yarn and delivered to a buyer against one despatch note shall constitute a lot.

**8.1.1** The conformity of a lot to the requirements of this specification shall be determined on the basis of the tests carried out on the samples selected from the lot.

**8.2** Unless otherwise agreed to between the buyer and the seller, a number of shirts depending upon the size of the lot shall be selected at random from the lot to constitute the gross sample. The number of shirts so selected shall be in accordance with col 2 of Table 4.

\*Code for inland packaging of cotton hosiery yarn and goods.

†Code for seaworthy packaging of cotton hosiery yarn and goods.

‡Method for statistical quality control during production by the use of control chart: Part I Control charts for variables ( first revision ).

**AMENDMENT NO. 1    MARCH 1978**  
**TO**  
**IS : 4375-1975 SPECIFICATION FOR COTTON**  
**KNITTED SPORTS SHIRTS**  
*( First Revision )*

**Alteration**

( Page 9, informal table under clause 8.3 ) — Substitute the following for the existing matter:

<i>Characteristic</i>	<i>Number of Shirts to be Tested</i>	<i>Criterion for Conformity</i>
Visual inspection and dimensions	See col 2 of Table 4	Non-conforming shirts not to exceed the corresponding number given in col 3 of Table 4
Dimensional change and pH value	See col 4 of Table 4	All the shirts to satisfy the relevant requirements
Colour fastness	1 for lot size of 500 and 2 above that	All the test specimens satisfy the relevant requirements

( TDC 15 )



**TABLE 4 SAMPLE SIZE AND PERMISSIBLE NUMBER OF NON-CONFORMING SHIRTS***( Clause 8.2 )*

NUMBER OF SHIRTS IN THE LOT	FOR DIMENSIONS AND VISUAL INSPECTION		NUMBER OF SHIRTS TO BE TESTED FOR CHEMICAL CHARACTERISTICS
	Number of Shirts to be Inspected	Permissible Number of Non-conforming Shirts	
(1)	(2)	(3)	(4)
Up to 50	8	0	3
51 to 100	13	1	5
101 „ 150	20	1	5
151 „ 300	32	2	8
301 „ 500	50	3	8
501 „ 1 000	80	5	13
1 001 and above	125	7	13

**8.3** The number of shirts to be tested and criterion for conformity for each of the characteristics shall be as follows:

<i>Characteristic</i>	<i>Number of Shirts to be Tested</i>	<i>Criterion for Conformity</i>
Visual inspection and dimensions	See col 2 of Table 4	Non-conforming shirts not to exceed the corresponding number given in col 3 of Table 4
Dimensional change, scouring loss and pH value	See col 4 of Table 4	All the shirts to satisfy the relevant requirements

## APPENDIX A

*( Clause 5.2 and Table 3 )*

### METHODS OF TESTS

#### A-1. CONDITIONING OF TEST SPECIMENS

**A-1.1** The test specimens shall preferably be conditioned for testing and tested in the standard atmosphere as given in IS : 6359-1971\*.

\*Method for conditioning of textiles.

## A-2. DIMENSIONS

**A-2.1 Procedure** — Take each sports shirt constituting the test specimens. Lay it flat on a table. Remove all creases and wrinkles without distorting it. Measure, correct to the nearest 0.5 cm, the dimensions as given in Table 2 when read with Fig. 1, 2 and 3.

## A-3. DIMENSIONAL CHANGE ( DUE TO RELAXATION )

**A-3.1 Marking of Test Specimens** — Take one of the pieces from the lot. Mark centrally on it by means of indelible ink conforming to IS : 394-1963\* ( see Note ) or a fast dyed cotton sewing thread an area 15 × 15 cm with two of its sides in the direction of wales and the other two in the direction of courses. Spread this test specimen on a flat smooth surface, carefully removing by hand all creases and wrinkles. Within this area, mark six pairs of marks, three pairs each in the wales and courses direction in such a way that the distance between each pair of marks is the same.

**NOTE** — If marking ink is not available, cotton sewing thread of contrasting colour and having a colour fastness rating '4 or better' to washing when tested by the method prescribed in IS : 687-1966† may be used.

**A-3.2 Procedure** — Take the test specimen and spread it on a flat smooth surface. Carefully remove by hand all creases and wrinkles without stretching the test specimen.

**A-3.2.1** Measure, correct to the nearest millimetre, the distance between each pair of marks separately.

**A-3.2.2** Lay the test specimen flat in a water-tight tray of suitable size and having a depth of minimum 10 cm. Soak it under a head of 25 mm of water containing 0.5 percent suitable wetting agent at 30 to 35°C temperature for 2 hours. Drain out the water and remove the test specimen carefully so that it is not stretched and lay it flat on a smooth surface. Remove the excess of water by absorbent material and dry it at room temperature.

**A-3.2.3** After drying, condition the test specimen to moisture equilibrium in a standard atmosphere ( see A-1.1 ). Place it on the glass plate, carefully remove all wrinkles and creases and place the other glass plate on the test specimen. Measure, correct to the nearest millimetre, the distance between each pair of marks separately.

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\*Specification for ink, cloth marking ( revised ).

†Method for determination of colour fastness of textile materials to washing: Test 1 ( first revision ).

**A-3.2.4** Calculate separately the percentage of dimensional change both in the direction of wales and in the direction of courses by the following formula:

$$S = \frac{100 \times (a - b)}{a}$$

where

$S$  = dimensional change, percent;

$a$  = the distance between a pair of marks (along the wales or courses as the case may be) before soaking; and

$b$  = the distance between the same pair of marks after soaking.

**A-3.2.5** Calculate separately the dimensional changes of all the three lines in the direction of wales and in the direction of courses and calculate average dimensional change in each direction.

# INDIAN STANDARDS INSTITUTION

## Headquarters

Manak Bhavan, 9 Bahadur Shah Zafar Marg  
NEW DELHI, 110002

Telephones: 26 60 21 27 01 31

Telegrams: Manaksanstha (Common to all Offices)

<i>Regional Offices</i>		<i>Telephone</i>
*Western	Manakalaya E9 MIDC, Marol Andheri (East) BOMBAY 400083	6 32 92 95
†Eastern	1/14 C I Y Scheme VII M V I P Road, Manikotla CALCUTTA 700054	36 24 89
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## *Branch Offices*

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## *Inspection Office (with Sale Point):*

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